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*BODIANUS BIMACULATUS*, A NEW SPECIES OF  
WRASSE (PISCES: LABRIDAE) FROM THE  
PALAU ARCHIPELAGO

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The Palau Archipelago is characterized by an unusually wide variety of marine habitats. Of special interest to biologists are the many outer reef dropoffs which fall away steeply to deep water. Dr. Walter A. Starck II and the author made several fish collections during February-March 1972, at a particularly spectacular dropoff adjacent to Bairakasaru Island, Ngemelis Islands ( $7^{\circ}05'45''\text{N}$ ,  $134^{\circ}15'15''\text{E}$ ; U.S.H.O. Chart 6073). This submarine cliff is situated only 20 meters from shore and plunges almost vertically from knee-depth water, at low tide, to at least 120 meters. At depths between 30 and 60 meters the cliff face is covered with growths of black coral (*Antipathes*). Among our collections from this locale are five specimens of an undescribed *Bodianus* which is reported herein. An additional paratype was collected by the author on a steep slope at Augulpelu Reef, about 20 nautical miles northeast of the type-locality.

Type-specimens have been deposited at the following institutions: Australian Museum, Sydney (AMS); Bernice P. Bishop Museum, Honolulu (BPBM); National Museum of Natural History, Smithsonian Institution, Washington, D. C. (USNM). Measurements were made with a needle-point dial caliper to the nearest one-tenth millimeter (mm).

Special thanks are due William D. Madden of Oceanic Institute, Waimanalo, Hawaii for making comparisons of *B. bimaculatus* with specimens of *B. opercularis* and *B. sanguineus*. I also thank Martin Gomon and Walter A. Starck II

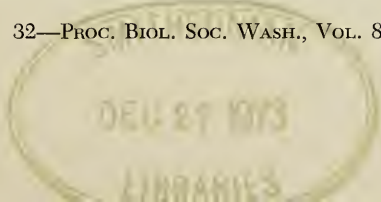




FIG. 1. *Bodianus bimaculatus*, holotype, 37.8 mm standard length, Palau Archipelago.

for comparing *B. bimaculatus* with the holotype of *sanguineus* at the National Museum of Natural History, Smithsonian Institution. Mr. Gomon is presently studying the systematics of *Bodianus*.

***Bodianus bimaculatus*, new species**

Figure 1

*Holotype*: BPBM 12444, 37.8 mm standard length, collected with quinaldine on vertical dropoff at Bairakaseru Island, Ngemelis Islands, Palau Archipelago, Philippine Sea at 42 meters depth by G. R. Allen on 5 March 1972.

*Paratypes*: AMS I.16763-001, 2 specimens, 35.0 and 41.1 mm, same data as holotype except collected on 12 March 1972; BPBM 12445, 2 specimens, 34.1 and 39.3 mm, same data as holotype except collected with rotenone at 40 to 48 meters depth by G. R. Allen and W. A. Starck II on 20 February 1972; USNM 208347, 50.2 mm, collected with quinaldine at Augulpelu Reef, off Aurapushekaru Island, Palau Archipelago at 42 meters depth by G. R. Allen, March 1972.

*Diagnosis*: A species of *Bodianus* with the following combination of characters: Greatest body depth 3.6 to 4.0 in standard length; dorsal rays XII,10; anal rays III,12; pectoral rays 14 to 16; lateral line scales 30 to 32; gill rakers 14 to 16; color pale (red-orange in life) with black spot on opercle and another on caudal base.

*Description*: The counts and proportional measurements which appear in brackets apply to the five paratypes. Table 1 gives measurements of the types expressed as percentage of the standard length.

Dorsal rays XII,10; anal rays III,12; pectoral rays 16 [14(1), 15(1), 16(3)]; pelvic rays I,5; branched caudal rays 12. Lateral line gently curved and continuous, with 31 [30(1), 31(3), 32(1)] scales to caudal base (as indicated by line of flexure) and 2 to 3 pored scales posteriorly; horizontal scale rows above lateral line to base of first soft dorsal rays

TABLE 1.—Morphometric proportions (in percent of standard length) of the six type-specimens of *Bodianus bimaculatus*

Morphometric measurement	Range	Mean
Standard length (mm)	34.1–50.2	—
Greatest body depth	25.4–27.7	26.4
Head length	34.3–38.4	36.4
Snout length	8.6–9.7	9.0
Eye diameter	8.6–11.5	9.9
Interorbital width	5.4–7.6	6.4
Least depth of caudal peduncle	14.0–15.8	15.0
Length of caudal peduncle	10.0–11.4	10.9
Snout to origin of dorsal fin	34.7–37.8	36.1
Snout to origin of anal fin	58.4–64.2	61.8
Snout to origin of pelvic fin	33.1–36.0	34.7
Length of dorsal fin base	49.1–52.9	51.9
Length of anal fin base	23.1–26.5	24.8
Length of pectoral fin	17.1–21.9	19.2
Length of pelvic fin	17.2–19.0	17.9
Length of pelvic spine	12.2–13.2	12.7
Longest (12th) dorsal spine	11.0–12.2	11.5
Longest (6th) soft dorsal ray	13.1–16.4	14.9
Length of 1st anal spine	4.5–6.1	5.2
Length of 2nd anal spine	7.8–8.0	7.6
Length of 3rd anal spine	11.2–13.5	12.1
Longest (11th) soft anal ray	11.4–14.8	13.3
Length of middle caudal rays	21.9–24.6	23.2

3½; below lateral line to base of first anal soft rays 10; predorsal scales 7 [6(1), 7(4)]; snout, chin, throat, and dorsal portion of head naked; preopercle and opercle scaled; a row of small sheath scales at base of dorsal and anal fins; enlarged scales covering about basal half of caudal fin; hindborder of preopercle entire (finely denticulate on most of the paratypes); gill rakers (including rudiments) 16 [14(1), 15(3), 16(1)].

Body elongate and compressed, its greatest depth 3.8 (3.6 to 4.0) in the standard length. Width of body at gill opening 2.4 (2.2 to 2.4) in the head length. Head pointed and laterally compressed, its length 2.6 (2.7 to 2.9) in the standard length. Snout 4.1 (3.7 to 4.2), eye 3.9 (3.1 to 4.4), interorbital width 6.0 (5.0 to 6.8), least depth of caudal peduncle 2.6 (2.3 to 2.7), length of caudal peduncle 3.5 (3.0 to 3.7), of pectoral fin 2.1 (1.6 to 2.2), of pelvic fin 2.2 (1.9 to 2.1), of middle caudal rays 1.6 (1.5 to 1.6), all in the head length.

TABLE 2.—Comparison of certain characters of three species of *Bodianus* (Number of specimens indicated in parentheses)

Character	Species		
	<i>B. bimaculatus</i> (6)	<i>B. opercularis</i> (4)	<i>B. sanguineus</i> (2)
Lateral line scales	30–32	40–41	40–41
Gill rakers	14–16	24	19
Color pattern:			
anal fin	yellow	yellow	red
caudal spot	present	absent	present
opercular spot	above pectoral base with stripe connecting eye	extends below pectoral base	same as <i>bimaculatus</i>

Dorsal spines gradually increasing in length to last spine which fits 3.2 (3.2 to 3.3) in the head length; first anal spine 7.6 (6.0 to 8.1), second anal spine 4.8 (4.4 to 4.7), third anal spine 3.0 (2.7 to 3.2), all in the head length; caudal and pectoral fins rounded.

A pair of enlarged, posteriorly curved canines in front of upper and lower jaw, and in between, two (one in upper jaw of 34.1 mm paratype) close set, enlarged teeth as symphysis of each jaw; a pair of canines (inconspicuous) at posteriormost portion of upper jaw; remaining teeth small and conical, in a single series.

*Color in alcohol:* Body and most of head whitish; prominent black spot, about size of pupil, on upper portion of opercle; a slightly smaller spot on upper caudal fin base; faint dusky stripe from posterior edge of eye to opercle spot (on one paratype it extends onto the middle of the sides to below last soft dorsal ray); spinous dorsal fin dusky with membranous portion between first two rays intensely blackish; remainder of fins translucent except distal portion of pelvics which are slightly dusky.

*Color when alive:* Most of head and body bright reddish-orange; abdomen, breast, and chin whitish; black ocellus surrounded by narrow yellow ring on upper portion of opercle; black spot on upper caudal base; brownish stripe extending from tip of snout to rear edge of opercle, passing through eye and opercular ocellus; six faint reddish longitudinal lines on side of body (corresponding with middle of six dorsalmost scale rows); spinous dorsal fin blackish with narrow marginal band of yellow; remainder of fins yellowish.

*Remarks:* *Bodianus bimaculatus* is closely related to *B. opercularis* (Guichenot, 1847) from the western Indian Ocean and *B. sanguineus* (Jordan and Evermann, 1903) from Hawaii. It differs from these species primarily on the basis of color pattern and counts for the lateral line

scales and gill rakers on the first arch. These differences are represented in Table 2. William D. Madden recently collected several specimens of *B. sanguineus*, previously known only from the holotype, off Oahu, Hawaiian Islands. He plans to publish a note on his findings and will include comparisons of this species with *B. opercularis*.

All three species are inhabitants of deep reefs and are known from only a few specimens. *B. bimaculatus* appears to be a small species. The 50.2 mm paratype was the largest of many individuals observed. *B. opercularis* and *B. sanguineus* are known from specimens ranging from 61 to 185 mm in standard length. *B. bimaculatus* was moderately common at the type-locality between depths of 40 and 60 meters.

The specific name, *bimaculatus*, refers to the characteristic black spots on the opercle and caudal peduncle.

*Addendum:* *B. bimaculatus* was recently collected by John E. Randall at Rabaul, New Britain, and Madang, New Guinea. At the latter locality specimens were taken from a sandy reef passage area in 30 meters and were primarily yellowish in color.

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